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A conceptual model for exploring the relationship between sustainability and project success

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Abstract

Sustainability is one of the most important challenges of our time. How can we develop prosperity, without compromising the life of future generations? Companies are integrating sustainability in their marketing, communication and their actions. Sustainability has more recently also been linked to project management. The logic behind this link is that sustainability needs change and projects are realizing change. Several studies explored how the concept of sustainability impact project management. The research project reported in this paper elaborates on these works by studying how sustainability affects the perception of project success. Project managers, logically, strive for project success and considering sustainability may influence the perception of success. Despite studies that show a positive business case of considering sustainability in business strategy, paying attention to sustainability aspects in projects is generally still perceived as 'costing time or money' and therefore as not supportive to project success. The conceptual model developed in this paper provides a more detailed understanding of how considering different dimensions of sustainability may affect the individual criteria of project success. The empirical part of the study is still in progress. This paper reports the literature review and the development of the conceptual model.

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Keywords: Sustainability; triple bottom line; project management; project management success.

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1. Introduction

In the last 10 to 15 years, the concept of sustainability has grown in recognition and importance[27]. How can we develop prosperity without compromising the future? Industry leaders realize that 'greenwashing' of current business practices is not a solution. The 2012 BSR/Globe Scan study[6] concludes that "The most important leadership challenge facing business today is the integration of sustainability into core business functions.". One of these business functions is project management, and 'green' or 'sustainable' project management' is identified as one of the most important global project management trends today[1].

Also in academic research, the relationship between project management and sustainability is explored[11, 5, 26] as one of the (future) developments in project management. The growing number of publications on the integration of sustainability into project management[26] indicate that the topic is "… picking up momentum"[28]. Based on a structured review of 164 books, articles, papers and book chapters, Silvius and Schipper[26] identify several 'impact areas' that provide leverage points for the consideration of sustainability in projects. One of these impact areas is project success. It is this aspect of the relationship between sustainability and project success, that the study reported in this paper explores. Integrating sustainability considerations in the project may be expected to, for example, enhance stakeholder satisfaction of the project. However, paying attention to sustainability aspects in projects is generally perceived to 'cost time or money' and therefore as not supportive to the time and budget criteria of project success, despite experiences that show a positive business case of considering sustainability in business strategy,

The research question of the study is formulated as *How does the explicit consideration of sustainability in projects, affect the perception of project success?* The rationale behind this question is that project managers, logically, strive for project success and that considering sustainability may have an influence on the perception of success.

The study is still in progress. This paper reports the literature review and the development of the conceptual model. The empirical phase of the study is planned for the second half of 2015.

2. Literature review

This section reports the review of earlier publications on the main variables of our research question: project success and sustainability. Based on the conceptualizations of these variables found in literature, we will construct the conceptual model of the study.

2.1. Project success

The concept, or criteria of, project success has been a variable in numerous studies. Few people would disagree with the statement that project success is interpretable in many ways. It is, simply put, a rather "elusive concept"[24]. Most early research on project success seems to emphasize the three traditional dimensions: (within) time, (within) budget and (within) specification, also known as the iron triangle, "despite the fact that this method is currently subject to widespread criticism"[4]. However, starting around the early 80s of last century, other factors are emerging in literature, such as "measuring success after delivery" that "involves looking at the benefits or effectiveness of the project from the perspective of the stakeholder"[16]. In one of the most cited publications from that period that took an extended look on project success, Pinto and Slevin emphasized the importance to consider project success "over time"[23]. The development of the perception of project success over time has also been pointed out by Shenhar et al.[25].

In our analysis of studies on project success, we found 27 different 'measures' of project success. Table 1 presents these measures and their sources. From this overview, it shows that project success is a multidimensional concept and that many factors are identified that go beyond the traditional 'iron triangle' criteria. Table 1 also demonstrates that there is no consensus about a universal (set of) measures for project success.

Table 1. Measures of project success found in literature.

Measures of project success		Sources								
		Pinto & Slevin[23]	Wateridge[30]	Baccarini[3]	Atkinson[2]	Shenhar et al.[25]	Collins & Baccarini[8]	Nelson[22]	Müller & Turner[21]	Thomas & Fernandez[29]
1	The project is completed within schedule	x	x	x	x	x	x	x	x	x
2	The project is completed within budget	x	x	x	x	x	x	x	x	x
3	The deliverable is meeting technical specifications		x	x	x	x	x	x	x	x
4	The deliverable is meeting functional performance requirements		x	x	x	x	x	x	x	x
5	The project management process is adequate			x			x			
6	Project risks are managed adequately						x			
7	The cooperation of parties and individuals in the project is good.						x			
8	The project is performed with a high standard of work quality.						x			
9	The customer of the project is using the deliverable (after completion)	x				x		x		x
10	The deliverable is fulfilling the customer's needs		x	x		x	x		x	
11	The deliverable is solving a customer's problem	x	x			x				
12	The project sponsor is satisfied with the project		x	x			x		x	x
13	The end-user is satisfied with the project	x	x	x		x	x		x	x
14	The supplier is satisfied with the project								x	x
15	The project team is satisfied with the project		x		x		x		x	x
16	The (other) stakeholders are satisfied with the project			x			x		x	x
17	The business objectives of the project are met	x	x	x	x	x	x	x	x	x
18	The business objectives of the suppliers / contractors are met				x		x		x	
19	The deliverable creates a larger market share of the customer organization		x		x	x	x			
20	The project prepares the organization for its future					x		x		x

21	The project contributes to the development of the participating organizations	x	
22	The project contributes to the development of the participating individuals	x	x
23	The project earns public recognition		x
24	The project reduces waste	x	
25	The project creates a positive economic impact on society	x	x
26	The project creates a positive social impact on society	x	x
27	The project creates a positive environmental impact on society	x	x

In order to develop a more comprehensive set of criteria of project success, we grouped, what we considered related, measures and concluded six condensed criteria of project success. These 2 presents this comprehensive set of criteria, that we will use for the conceptual model of our study.

Table 2. Criteria of project success.

Criteria	Measures included in this criterion
The project is executed in a controlled manner	The project management process is adequate Project risks are managed adequately The project is performed with a high standard of work quality.
The agreed project deliverable is completed on schedule and within budget	The project is completed within schedule The project is completed within budget The deliverable is meeting technical specifications
The project's deliverable is 'fit for purpose'	The deliverable is meeting functional performance requirements The customer of the project is using the deliverable (after completion) The deliverable is fulfilling the customer's needs The deliverable is solving a customer's problem
The business objectives or goals of the project are realized	The business objectives of the project are met The business objectives of the suppliers / contractors are met The deliverable creates a larger market share of the customer organization
The stakeholders of the project are satisfied	The project sponsor is satisfied with the project The (other) stakeholders are satisfied with the project The end-user is satisfied with the project The supplier is satisfied with the project The project team is satisfied with the project The cooperation of parties and individuals in the project is good.
The project prepares the organization for the future	The project prepares the organization for its future The project contributes to the development of the participating organizations The project contributes to the personal/professional development of the participating individuals The project creates a positive economic impact on society The project creates a positive social impact on society The project creates a positive environmental impact on society The project earns public recognition

2.2. Sustainability in project management

The balance between economic growth and social wellbeing has been around as a political and managerial challenge for over 150 years[9]. Also the concern for the wise use of natural resources and our planet emerged already many decades ago, with Carson's book "Silent Spring"[7] as a launching hallmark. In 1972 the 'Club of Rome', an independent think tank, published its book "The Limits to Growth"[20]. In this book, the authors concluded that if the world's population and economy would continue to grow at their current speeds, our planet's natural resources would approach depletion. The Limits to Growth fuelled a public debate, leading to installation of the UN 'World Commission on Development and Environment', named the Brundtland Commission after its chair. In their report, the Brundtland commission defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs"[31]. By stating that "In its broadest sense, sustainable development strategy aims at promoting harmony among human beings and between humanity and nature", the report implies that sustainability requires also a social and an environmental perspective, next to the economical perspective, on development and performance.

The vision that none of the development goals, of economic growth, social wellbeing and a wise use of natural resources, can be reached without considering and effecting the other two, got widely accepted[17]. In his book "Cannibals with Forks: the Triple Bottom Line of 21st Century Business", John Elkington identifies, this as the 'triple bottom line' or 'Triple-P (People, Planet, Profit)' concept: Sustainability is about the balance or harmony between economic sustainability, social sustainability and environmental sustainability[10]. In addition to the triple bottom line dimensions, several publications also consider other dimension of sustainability that are relevant to project management. Based upon an extensive analysis of publications that relate the concepts of sustainability to projects and project management, Silvius and Schipper[26] identify the following dimensions of sustainability.

- An economic dimension: considering economic effects and benefits.
- A social dimension: considering human and societal interests.
- A ecological dimension: considering effects on nature and earth.
- A time dimension: considering also long term effects.
- A values dimension: understanding sustainability as a normative concept.
- A geographical dimension: considering both local and global effects.
- A performance dimension: considering failure and non-performance as a waste of resources and energy.
- A participation dimension: sustainable development requires inclusion and participation of stakeholders.
- A waste (reduction) dimension: reducing and, if possible, preventing waste.
- A transparency dimension: openly and proactively providing information to stakeholders.
- A accountability dimension: being willing and available to be held accountable for decisions and actions.
- A cultural dimension: respecting differences in values and culture.
- A risk (reduction) dimension: reducing and, if possible, avoiding certain risks.
- A political dimension: recognizing different interests of stakeholders.

After the analysis of the dimensions of sustainability found in the publications on sustainability in project management, they then synthesized these dimensions and concluded that the following dimensions of sustainability are relevant to the integration of sustainability into project management.

Sustainability is about balancing or harmonizing social, environmental and economical interests

In order to contribute to sustainable development, a company should satisfy all 'three pillars' of sustainability: social, environment and economic[10]. The dimensions are interrelated, that is, they influence each other in various ways.

Sustainability is about both short-term and long-term orientation

A sustainable company should consider both short-term and long-term consequences of their actions, and not only focus on short-term gains[12]. The dimension of both short-term and long-term orientation, focuses the attention to the full lifespan of the matter at hand[5].

Sustainability is about local and global orientation

The increasing globalization of economies effects the geographical area that organizations influence. Intentionally or not, many organizations are influenced by international stakeholders whether these are competitors, suppliers or (potential) customers. The behaviour and actions of organizations therefore have an effect on economical, social and environmental aspects, both locally and globally. "In order to efficiently address these nested and interlinked processes sustainable development has to be a coordinated effort playing out across several levels, ranging from the global to the regional and the local"[12].

Sustainability is about values and ethics

Sustainable development is inevitably a normative concept, reflecting values and ethical considerations of society[11, 27]. The changes needed for more a sustainable development, will therefore also reflect the implicit or explicit set of values that we as professionals, business leaders or consumers have and that influence or lead our behavior.

Sustainability is about transparency and accountability

The principle of transparency implies that an organization is open about its policies, decisions and actions, including the environmental and social effects of those actions and policies[15]. This implies that organizations provide timely, clear and relevant information to their stakeholders so that the stakeholders can evaluate the organization's actions and can address potential issues with these actions.

Complementing the principle of transparency, is the principle of accountability. This principle implies that an organization is responsible for its policies, decisions and actions and the effect of them on environment and society. The principle also implies that an organization accepts this responsibility and is willing to be held accountable for these policies, decisions and actions.

Sustainability is about stakeholder participation

Considering and respecting the potential interests of stakeholders is key to sustainability. ISO 26000 emphasizes the behavioral side of this principle, by mentioning "proactive stakeholder engagement" as one of its principles[15]. Stakeholder participation therefore requires "a process of dialogue and ultimately consensus-building of all stakeholders as partners who together define the problems, design possible solutions, collaborate to implement them, and monitor and evaluate the outcome"[14].

Sustainability is about risk reduction

The so-called precautionary principle is based on the understanding that in environment-society system interactions, the complexity, indeterminacy, irreversibility and nonlinearity has reached a level in which it is more efficient to prevent damage, rather than ameliorate it. The recent Deepwater Horizon oil-spill disaster, has fuelled the discussion on the suitability of financial risk management techniques for societal and environmental risks.

Sustainability is about eliminating waste

The importance of eliminating waste is mentioned by several authors[18]. They refer to "The Seven Wastes" as identified in the Toyota production system. These seven wastes are: overproduction, waiting, transporting, inappropriate processing, unnecessary inventory, unnecessary or excess motion and defects. The principle of eliminating waste can also be found in the cradle-to-cradle concept[19] that builds upon the idea that waste equals food.

Sustainability is about consuming income, not capital

Sustainability implies that nature's ability to produce or generate resources or energy remains intact. The 'source and sink' functions of the environment should not be degraded. Meaning that the extraction of renewable resources should not exceed the rate at which they are renewed, and the absorptive capacity of the environment to assimilate waste should not be exceeded[13]. The principle may also be applied to the social perspectives[27]. Organizations should

also not 'deplete' people's ability to produce or generate labor or knowledge by physical or mental exhaustion. In order to be sustainable, companies have to manage not only their economic capital, but also their social and environmental capital.

The dimensions of sustainability listed above provide the conceptualization of considering sustainability in projects and project management and project management processes, we will use in our study.

3. Research design

3.1. Conceptual model

Based on the literature review of the two variables in our research question, we can now construct the conceptual model of our study. Figure 1 shows this conceptual model.

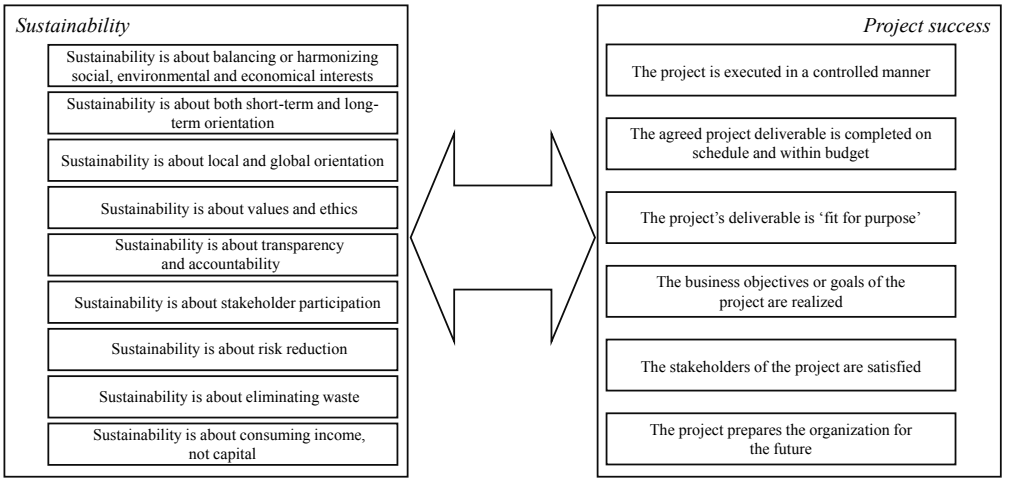

Fig. 1. Conceptual model of the study.

3.2. Methodology

Notwithstanding the explorative nature of the study, we plan to deploy quantitative methods in data collection and analysis. Data collection will be based on a structured questionnaire, asking the respondents the expected or perceived effect considering explicitly a specific dimension of sustainability on the different criteria of project success. A sample question set is presented hereunder.

[Question asking the expected effect of considering the sustainability dimension 'risk reduction' on the different criteria of project success.]

How do you expect that explicitly considering opportunities for risk-reduction will …

- *… affect the chance that the project is executed in a controlled manner?*
- *… affect the chance that the agreed project deliverable is completed on schedule and within budget?*
- *… affect the chance that the project's deliverable is 'fit for purpose'?*
- *… affect the chance that the business objectives or goals of the project are realized?*
- *… affect the chance that the stakeholders of the project are satisfied with the project?*
- *… affect the chance that the project prepares the organization for the future?*

The respondents will be asked to score their answers on these question on a 5-point Likert scale with scores rating from 'Very negatively' to 'Very positively', with the middle scoring position labeled as 'No effect'. Sampling will be based on convenience sampling, using personal networks and (online) project management communities. The questionnaire will be administered using SurveyMonkey.

Analysis of the data will be done in SPSS. The analysis will be oriented towards establishing a more detailed understanding on how the nine dimensions of sustainability affect the perception of the six criteria of project success.

4. Conclusion

The understanding of how the consideration of sustainability influences project management processes and practices is an important condition for the much needed integration of sustainability concepts into project management. The study reported in this paper plans to explore the relationship between considering sustainability and the perception of project success. Based on a literature review of the two main variables, sustainability and project success, a conceptual model for the study was developed that showed that the relationship between sustainability and project success is not a simple one. In the model, nine dimensions of sustainability are identified and the measures for project success are clustered into six criteria. With this model, a more detailed understanding of how considering different dimensions of sustainability may affect the individual criteria of project success.

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